



Evaluation of Psychosocial Symptoms in Adolescents During the COVID-19 Pandemic in Turkey by Comparing Them with the Pre-pandemic Situation and Its Relationship with Quality of Life

Türkiye’de COVID-19 Pandemisi Döneminde Ergenlerde Psikososyal Belirtilerin Pandemi Öncesi Durumla Karşılaştırılması ve Yaşam Kalitesi ile İlişkisinin Değerlendirilmesi

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ABSTRACT

Objective: This study investigated the changes in psychosocial symptoms in adolescents in Turkey during the pandemic and their relationship with the quality of life (QoL).

Methods: A total of 118 adolescents reached via Google e-forms, participated in the study. The affective reactivity index-parent-report, hyperactivity/impulsivity and inattention sub-scale of Turgay-DSM-IV-S, revised child anxiety and depression scales-parent version, and the pediatric QoL inventory were utilized for psychosocial symptoms’ evaluation.

Results: Compared to the pre-pandemic period, a significant increase in adolescents’ attention problems, hyperactivity/impulsivity, and irritability, and a decrease in general, psychosocial, and physical QoL were found. The psychosocial and total QoL scores showed moderate/high levels of negative correlations with irritability, attention problems, depression, separation anxiety, generalized anxiety, panic, social anxiety, and obsessive-compulsive disorder scores.

Conclusion: The pandemic process in Turkey has adversely affected the mental health of adolescents. In increased psychosocial symptoms in this process are associated with lower QoL.

Keywords: COVID-19 pandemic, psychosocial symptoms, adolescent, quality of life

ÖZ

Amaç: Bu çalışma, Türkiye’de pandemi döneminde ergenlerde psikososyal belirtilerde meydana gelen değişiklikleri ve yaşam kalitesi (YK) ile ilişkisini araştırmayı amaçlamıştır.

Gereç ve Yöntem: Çalışmaya Google e-formları aracılığıyla ulaşılan toplam 118 ergen katılmıştır. Afektif reaktivite indeksi-ebeveyn formu, Turgay-DSM-IV-S hiperaktivite/dürtüsellik ve dikkatsizlik alt ölçekleri, çocuklarda anksiyete ve depresyon ölçeği-yenilenmiş ebeveyn formu ve pediatrik YK envanteri psikososyal belirtilerin değerlendirilmesi için kullanılmıştır.

Bulgular: Pandemi öncesi döneme göre ergenlerde dikkat sorunları, hiperaktivite/dürtüsellik ve irritabilitede anlamlı artış; toplam, psikososyal ve fiziksel YK’lerinde düşüş saptandı. Psikososyal ve toplam YK puanları, sinirlilik, dikkat sorunları, depresyon, ayrılık kaygısı, yaygın kaygı, panik, sosyal kaygı ve obsesif kompulsif bozukluk puanları ile orta/yüksek düzeyde negatif korelasyon gösterdi.

Sonuç: Türkiye’de pandemi süreci ergenlerin ruh sağlığını olumsuz etkilenmiştir. Ve bu süreçte artmış olan psikososyal semptomlar düşük YK ile ilişkilidir.

Anahtar Kelimeler: COVID-19 pandemisi, psikososyal belirtiler, ergenlik, yaşam kalitesi

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INTRODUCTION

The coronavirus disease-2019 (COVID-19), that started in China in November 2019 and spread out to the world, has rapidly become a global problem and was announced as a pandemic by the World Health Organization in March 2020 because of its alarming rate of spread (1). Starting from the day it first appeared, countries have taken multiple precautions such as social isolation, quarantine, lockdown, social distance measures, and mask requirements to reduce the spread of COVID-19 (2,3). Because of the measures taken in this process, many restrictions affecting social life such as the closure of schools and workplaces, working from home, online training, encouraging staying at home, and closing of sports facilities and entertainment venues have occurred. The threat, panic, and fear created by these measures and the pandemic itself have created a significant change in the daily lives of people from all age groups compared to the pre-pandemic period (4). The effects of these changes brought by the pandemic on children and adolescents' mental health and well-being have been a concern since the early days.

The United Nations has reported that the pandemic disrupts mental health and physical health. In an online study conducted in China during the early stages of the outbreak, 320 children were investigated in terms of behavioral and emotional responses to the pandemic, and the most common problems were reported as distractions, irritability, and worry of asking questions about the pandemic, anxiety, and depression (4). In another study conducted in the United Kingdom to evaluate difficulties in children and youth with an online survey, it was shown that the younger age group had higher levels of anxiety and fear (5). During adolescence, when physical, psychological, and social changes and development occur, adolescents may experience greater difficulty in coping with crises because their resilience and coping skills are not yet sufficiently developed (6,7). Additionally, peer relationships become more important due to increased social sensitivity during adolescence. The quality of peer relationships plays a role in shaping self-concept and guiding behavior (8). Positive peer relationships in this developmental period provide social and emotional support, which is protective in terms of psychiatric disorders. Studies have shown that the biggest concerns of adolescents during the COVID-19 pandemic are not related to catching the virus or getting sick but to a decrease in social interactions (9).

It is known that COVID-19 causes a milder infection in adolescents compared to adults (4). However, in the child and adolescent age group, who are already at higher risk

of developing psychological troubles compared with adults, the outcomes of the pandemic on mental health become even more significant, due to various vulnerability factors (10,11). Outbreaks can be a source of adverse childhood experiences (ACE) that negatively affect development by creating the risk of getting sick, quarantine, social isolation, and high stress level in parents. ACEs are defined as traumatic or stressful incidents in childhood, such as neglect, abuse, violence, and pandemics, that adversely affect individual and social health, neural development, physical and mental health, and working capacity in adulthood (12,13). Although the studies have shown that the pandemic causes emotional and behavioral changes in children and adolescents, the effects of the pandemic on adolescent mental health have been relatively less focused on.

It has also been reported that children and adolescents experience a significant reduction in their quality of life (QoL) because of the challenges and changes brought about by COVID-19 (14). Nevertheless, there is limited information in the literature about the relationship between a deterioration in the QoL and psychosocial and behavioral complaints in adolescents. With a better understanding of this issue through studies, groups with a high risk of developing psychosocial problems despite future pandemics, such as the COVID-19 pandemic, will be better known and have an opportunity to be better intervened. Moreover, because of the increase in knowledge on this subject, it may be possible to prevent, improve and rehabilitate the negative psychosocial consequences that may develop.

Countries have taken different levels of precaution against the COVID-19 pandemic. There are different opinions about the effects of these measures on mental health (15-17). However, the general view is that stricter COVID-19 policy restrictions are associated with worse mental health because they reduce social contact and increase physical distance. Stricter measures are thought to negatively affect mental health (17). Due to the differences in the measures taken, there will likely be differences in the effects on mental health. Turkey was a country that took strict measures to reduce the spread of the virus. Some of the early and radical measures implemented in this process in Turkey were as follows; education was suspended, then online education was started, schools, gyms, places of worship, restaurants, shopping malls, entertainment venues, restaurants were closed, foreign entry-exit ban was applied, long-term and comprehensive quarantine and curfew were applied. The long-term curfew under 18s and over 65s and the prohibition of the use of urban public transportation may have affected the mental health of these age groups more negatively.

Therefore, when examining the effects of the pandemic on mental health, considering the variation in COVID-19 policy restrictions of the countries, it will provide more accurate results.

Consequently, in this study, we investigated the changes in anxiety, depression, irritability, and attention deficit and hyperactivity symptoms in adolescents with the pandemic and their relationship with QoL.

METHODS

Participants and Procedures

A total of 118 adolescents and their families from different cities of Turkey, reached via Google e-forms, participated in the study between May and June 2021, when the 3rd wave of the pandemic was effective in Turkey. After the participants were given detailed information about the research and informed that their participation would be voluntary, the sociodemographic data form and scales were applied to the volunteers. Participants were asked to fill in the applied scales and questionnaires twice. The 1st was according to the pandemic conditions; the second was according to the period before the pandemic started. Ethical consent and approval (Bakırköy Dr. Sadi Konuk Training and Research Hospital Clinical Research Ethics Committee - decision no: 2021-10-03, date: 17.05.2021) of the study and written informed consent were obtained.

Sociodemographic data form: In the form, information about gender, age, school-education status, parents, and family characteristics were collected. Participants with a previous history of psychiatric illness were excluded from the study.

Affective reactivity index-parent-report (ARI-P): to measure the irritability of level participants, the ARI-P scale was used. The ARI-P consists of six items evaluating irritable attitudes, including the frequency, course, and threshold of the action. A 3-point Likert-type measure ranging from "(0) not true" to "(2) definitely true" is used to survey every item, with the overall score ranging from 0 to 12. Chronic irritability was specified by a higher score. The validity and reliability study of ARI for the Turkish form was conducted (ARI-p: $\alpha=0.83$) (18).

Turgay DSM-IV based children and adolescents behavior disorders screening and rating scale (Turgay-DSM-IV-S): The Hyperactivity/impulsivity and inattention levels of subjects were assessed using the scores of the parents for their children on the Turgay-DSM-IV-S that is a broadly used scale for attention-deficit/hyperactivity problems. It is based on the DSM-IV diagnostic criteria and evaluates hyperactivity/

impulsivity (9 items), inattention (9 items), opposition/ defiance (8 items), and conduct disorder (15 items). The items are scored by defining a severity rating for every symptom on a 4-point likert-type measure (namely: 0 not at all, 1 just a little, 2 quite a bit, 3 very much). Hyperactivity/ impulsivity and inattention sub-scale were used in this study (19).

Revised children anxiety and depression scales, parent form (RCADS-P): RCADS-P is a questionnaire with 47-items designed to assess depression and anxiety symptoms in children and adolescents based on DSM-IV diagnostic criteria. Reply choices are based on 4-point Likert-type scales (0= never, 1= sometimes, 2= often, and 3= always). The measure has 6 sub-scale scores [separation anxiety disorder, social phobia, obsessive-compulsive disorder (OCD), panic disorder, generalized anxiety disorder, major depressive disorder], total anxiety score (total of five anxiety subscales), and total anxiety and depression score. Gormez et al. (20) conducted a validity and reliability study of the Turkish form of RCADS-P.

The pediatric quality of life inventory (PedsQL): PedsQL filled out by parents was used to assess the QoL and functioning. The PedsQoL evaluates the health-related QoL in child and adolescent. It is calculated in three scores psychosocial health, physical health, and total QoL overall score. PedsQL-psychosocial sub-scale comprising 15 items, examines areas of emotional functioning, social functioning, and school functioning. A validity and reliability study of the Turkish form for adolescents has been conducted (21).

Statistical Analysis

Statistical analyses were performed using the IBM Statistical Package for the Social Sciences Statistics 22 statistical software package program. The statistical data for the groups were expressed using the mean and standard deviation. Comparisons between the pre-pandemic and the pandemic periods were compared using the Wilcoxon signed-rank test. The correlations between QoL scores and psychosocial symptom scores were analyzed using the Spearman rho correlation coefficient. A value of $p<0.05$ was considered statistically significant.

RESULTS

A total of 118 adolescents, 77 (65%) girls, and 41 (35%) boys were included in the study. The mean age of the sample was 13.2 (± 2.1) years. The sociodemographic characteristics of the sample are summarized in Table 1.

Psychosocial symptoms and QoL scores between the pre-pandemic and the pandemic periods were compared using the Wilcoxon signed-rank test since the data were not

normally distributed. Comparison analysis are presented in Table 2. In the pandemic, the irritability levels evaluated with ARI-parent-report were significantly increased compared with the pre-pandemic period ($Z=-6.285$, $p<0.001$). In the Turgay attention deficit hyperactivity disorder (ADHD) scale, attention and hyperactivity/impulsivity problems increased significantly in the pandemic compared to the pre-pandemic period ($Z=-6.339$, $p<0.001$; $Z=-4.245$, $p<0.001$, respectively). A statistically significant increase was observed in all depression, anxiety, and OCD scores evaluated with the RCADS-parent report compared with the pre-pandemic period (Table 2). Additionally, in the parent report Ped. QoL scale, a statistically significant decrease was observed in the health-related psychosocial and physical QoL in the pandemic compared to the pre-pandemic period ($Z=-6.944$, $p<0.001$; $Z=-4.453$, $p<0.001$, respectively).

Table 1. Sociodemographic variables of the participants

	n (%)
Sex	
Male	41 (35%)
Female	77 (65%)
Age (mean \pm SD) (y)	13.2 \pm 2.1 Min =10 Max =17
School	
Elementary school	81 (69%)
High school	37 (31%)
SES	
Low	12 (10%)
Middle	45 (38%)
High	61 (52%)
Maternal	
Age (mean \pm SD) (y)	41.3 \pm 5.5
University education*	50 (42%)
Employment**	47 (40%)
Paternal	
Age (mean \pm SD) (y)	45.2 \pm 6.7
University education*	61 (52%)
Employment**	116 (98%)
Divorced family	5 (4.2%)

SES: Socio-economic status, SD: Standard deviation, y: Years, Min: Minimum, Max: Maximum
*Number of parents with university or higher education
**Number of employed parents

The correlations between QoL scores and psychosocial symptom scores were analyzed using the Spearman rho correlation coefficient test. The psychosocial QoL and total QoL scores showed moderate/high levels of negative correlations with irritability, attention problems, depression, separation anxiety, generalized anxiety, panic, social anxiety, and OCD scores. Additionally, they were weakly negatively correlated with the hyperactivity/impulsivity score. Physical health QoL score was weakly negatively correlated with all psychosocial symptom scores except generalized anxiety. There was no correlation with generalized anxiety. The results of the correlation analyzes are summarized in Table 3.

DISCUSSION

In this study, the changes due to the pandemic in the mental health and perceived health-related QoL of 10-17-year-old adolescents in Turkey were investigated. Our findings showed that the general QoL of adolescents and their psychosocial and physical QoL have been impaired by the pandemic. Further, it was found that mental health-related problems such as irritability, attention problems, hyperactivity/impulsivity, depression, anxiety, and OCD symptoms increased in young people compared with the pre-pandemic period. The perceived general and psychosocial QoL during the pandemic, which was lower than before, were highly correlated with these increased mental health-related problems. The physical QoL was also found to have similar but weaker relationships. The findings of our study indicate that the COVID-19 pandemic and associated events such as quarantine, curfew, and school closures have a negative impact on the mental health and QoL of adolescents in Turkey.

There are some points in this study that we think are critical. First all, the research has focused especially on the adolescent age group. The pandemic may have varying levels of effects on different age groups, especially in adolescence, which is a vulnerable period of life, and should be thoroughly examined in this process. Secondly, the pre-pandemic period was taken as a baseline in the evaluations. In this way, the situation during the pandemic was compared with the pre-pandemic period, which was evaluated retrospectively, and particularly the effects of the pandemic process were tried revealed. Thirdly, as mentioned above, due to the variability in the reactions of different countries to the pandemic, we think that this study is important in terms of revealing the results of the relatively strict measures taken in Turkey on adolescents (especially for citizens under the age of 20). Fourth, we tried

Table 2. Comparison of psychosocial symptoms' and Quality of life scores between the pre-pandemic and the pandemic period

	Pre-pandemic period		Pandemic period		Z	p
	Mean	SD	Mean	SD		
Irritability	2.43	±2.51	3.95	±3.2	-6.285	<0.001
Turgay ADHD						
Attention problems	4.92	±5.05	7.18	±5.94	-6.339	<0.001
Hyperactivity and impulsivity	5.14	±4.85	6.33	±5.41	-4.245	<0.001
RCADS-parent report						
Depression	52.2	±12.2	58.5	±14.4	-6.705	<0.001
Separation anxiety	51.3	±10.8	53.6	±12.1	-3.736	<0.001
Generalized anxiety	51.9	±12.1	55.4	±13.6	-5.833	<0.001
Panic	51.4	±12.3	54.4	±13.4	-4.833	<0.001
Social anxiety	48.8	±11.5	51.8	±12.4	-5.198	<0.001
OCD	54.7	±10.4	57.8	±12.0	-5.691	<0.001
Total anxiety	51.9	±12.4	55.5	±13.7	-6.413	<0.001
Total anxiety & depression	52.0	±12.5	56.5	±13.9	-6.829	<0.001
Quality of life (QoL)						
Psychosocial QoL	76.9	±16.2	70.0	±17.7	-6.944	<0.001
Physical health QoL	73.2	±17.5	68.2	±18.5	-4.453	<0.001
Total QoL	75.6	±13.4	69.4	±15.6	-7.084	<0.001

SD: Standard deviation, ADHD: Attention deficit hyperactivity disorder, RCADS: Revised children anxiety and depression scales, OCD: Obsessive-compulsive disorder

evaluating the symptoms related to mental health in a wide spectrum with various scales and evaluated their effects on functioning in relation to the QoL.

In our study, we found a significant increase in attention problems, hyperactivity/impulsivity, and irritability in adolescents compared with the pre-pandemic period. Irritability is characterized by constant anger, negative emotions, and outbursts or tantrums (22), and is included in diagnostic classifications as a symptom of many psychiatric disorders (23). In a systematic review investigating the effects of measures taken due to COVID-19 on child and adolescent mental health (24), irritability in children and adolescents ranged from 16.7% (25) to 73.2% (26). In line with our findings, in an online survey conducted in the early stages of the pandemic, in which 320 children and adolescents aged 3-18 participated, it was shown that distraction (32%) and irritability (31%) were among the most common psychological and behavioral problems (4). In a survey study involving parents of children aged 3-18 in Italy and Spain, it was reported that difficulty in concentrating (76.6%), boredom (52%), irritability (39%), and restlessness (38.8%) were among the common symptoms (27). Additionally, in children with ADHD, symptoms worsen

during this period (28), as well as an increase in attention problems has been detected in studies conducted with healthy children (29). In the contrast, some studies showed that there was no significant increase in stress and a decrease in irritability during the pandemic compared to the pre-pandemic period (30). This result was thought to be related to the fact that the study was conducted in the early phase of the pandemic. Additionally, the closure of schools and the decrease in social contact were thought to play a role in the formation of these results, as they reduce the two most important triggers of stress and irritability in adolescents. We interpreted this contradiction as the complexity of adolescence experiences and the variability of the consequences of stressful events depending on cultural contexts.

In our study, it was found that the anxiety and depressive symptoms of adolescents increased compared with the pre-pandemic period. Our result is consistent with the work done so far in this area. There are many studies showing an increase in symptoms associated with anxiety and depression during the COVID-19 pandemic (31). Our finding that OCD-related complaints increase in adolescents is also in line with studies on this subject. Studies argue that

Table 3. Correlations between quality of life scores and psychosocial symptom scores

		Psychosocial QoL	Physical health QoL	Total QoL
Irritability	r	-0.438	-0.262	-0.443
	p	<0.001	0.004	<0.001
Attention problems	r	-0.519	-0.327	-0.532
	p	<0.001	<0.001	<0.001
Hyperactivity and impulsivity	r	-0.287	-0.227	-0.342
	p	0.002	0.014	<0.001
Depression	r	-0.675	-0.311	-0.621
	p	<0.001	0.001	<0.001
Separation anxiety	r	-0.470	-0.244	-0.454
	p	<0.001	0.008	<0.001
Generalized anxiety	r	-0.557	-0.176	-0.487
	p	<0.001	0.057	<0.001
Panic	r	-0.529	-0.236	-0.484
	p	<0.001	0.010	<0.001
Social anxiety	r	-0.659	-0.234	-0.592
	p	<0.001	0.011	<0.001
OCD	r	-0.554	-0.233	-0.511
	p	<0.001	0.011	<0.001
Total anxiety & depression	r	-0.702	-0.283	-0.637
	p	<0.001	0.002	<0.001

OCD: Obsessive-compulsive disorder, QoL: Quality of life

OCD-related problems are a problem that people are most affected in terms of mental health during the pandemic process (32). However, as mentioned above, the mental health consequences of the pandemic may differ among cultures and societies. Besides, the developmental period is also a substantial factor in this respect. Therefore, our study is important because it focuses on the situation of adolescents in Turkey. Moreover, our study addressed the subtypes of anxiety disorders and showed that the problems increased in most types of anxiety.

Considering the QoL, the results of our study showed that after the pandemic, both the total score and the psychosocial and physical health QoL sub-scores decreased in adolescents. Further, in the correlation analysis, psychosocial QoL score was highly negatively correlated with irritability, attention problems, hyperactivity/impulsivity, depression, anxiety, and OCD symptoms. This finding is important in that the increase in mental health-related problems indicates the deterioration of psychosocial functionality. Additionally, this result can be considered an expected natural relationship, but interestingly, correlation

analyses revealed that mental health-related problems were associated with the physical health QoL sub-score, albeit weakly. Studies have also reported that children and adolescents have a lower health-related QoL and higher levels of depression and anxiety compared to the pre-pandemic period (33). In a systematic review of six studies (14), three studies reported a decrease in health-related QoL in children and adolescents with the pandemic, two reported no significant change, and one study failed to make a statistical comparison. In this review, the decline in health-related QoL was attributed to the restrictions and practices that adolescents find difficult to comply with, such as quarantine, social isolation, and confinement, as well as deterioration in mental health. The results of our study also seem to be compatible with the results of this review.

The nationwide COPSYP ('Corona und Psyche') study conducted in Germany investigated the mental health and health-related QoL of children and adolescents after the first and second waves of COVID. Results, although more modest in the second wave, showed a significant decline in health-related QoL (34,35). Again, in a study evaluating mental

health and health-related QoL in adolescents after the third wave in Germany, the results were found to be similar to those before the pandemic. It has been suggested that this result is related to stress adaptation processes, development of coping strategies, better management of the pandemic, and reduction of quarantine measures and vaccines (36). This study is important in terms of demonstrating that the effects of the pandemic on the QoL can be reversible and may change with the measures taken. However, considering that our study shows the situation of the young people in Turkey in May-June 2021 when the third wave of the pandemic was effective, it does not coincide with the results of the third wave from these studies in Germany. This difference has been interpreted because of the differences in the measures taken between the two countries. The data of our study were collected in May-June 2021. The first wave of the pandemic in Turkey was in the spring of 2020, the second wave was in the winter of the same year; the third wave was seen in the spring of 2021.

As in the whole world, measures have been taken to control the spread of COVID-19 in Turkey. However, the measures seem to contribute to the negative results on mental health and the QoL of adolescents in Turkey. One of these measures, which continued for a very long time, was the curfew for young people under the age of 20. We speculate that one of the possible interpretations of these results is that adolescents staying online for too long may have contributed to these results. While young people stayed at home, many daily activities such as education, socializing and leisure activities were carried out using the internet. This means they are exposed to more online activities than before (37). Additionally, the results can be attributed to factors such as decreased social interaction with peers, decreased contact with support factors, social isolation, perceived stress level by parents, and decreased access to mental health services (38,39).

This study has several limitations. First all, the study was planned as cross-sectional and baseline data were collected retrospectively from the participants. This may have led to possible biases. Second, the study had a modest sample size. Another limitation was that the evaluation relied on self- and parent reports rather than clinician interviews. Requiring participants to remember their pre-pandemic situation retrospectively may be another limitation that increases the possibility of bias in the data. Additionally, the study was applied as an online survey. Online surveys often carry biases, such as content bias affecting the representativeness of the research sample, and social desirability bias, that may be common because of self-report.

CONCLUSION

We conclude that adolescents are especially vulnerable to mental health problems in a pandemic and under the measures implemented to avoid an outbreak. The study indicates that the QoL of adolescents has been impaired by the pandemic in Turkey. Further, it was found that mental health-related problems such as irritability, attention problems, hyperactivity/impulsivity, depression, anxiety, and OCD symptoms increased in young people compared with the pre-pandemic period. Also, results imply an association between QoL and mental health-related problems. In the results of this study, only associations between the pandemic, and deterioration in adolescents' mental health and QoL were demonstrated, and no causal relationships could be concluded. The measures implemented by countries in the pandemic and the pandemic itself should be considered a potential risk of adverse events for adolescents. While measures are necessary to overcome outbreaks, it also must be considered that their impact on the mental health conditions of adolescents and identified strategies to combat this secondary damage. Future studies on this subject should examine how these effects of the pandemic have evolved, and the permanence of these findings should be investigated.

ETHICS

Ethics Committee Approval: The study protocol was approved by the Bakirköy Dr. Sadi Konuk Training and Research Hospital's Local Ethics Board (decision no: 2021-10-03, date: 17.05.2021).

Informed Consent: Written informed consent were obtained.

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